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Closure device, especially for a refrigerator door and refrigerator equipped with this device

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The invention concerns a closure device especially for a refrigerator door, a device comprising a forked latch supported to pivot, cooperating with a door latch to close the door, the latch being articulated on a pivoting lever, on which a closure spring also acts, and a door handle supported to pivot on the door, which, on opening, brings the pivoting lever into the blocked position of opening by causing it to pivot around its fixed pivot and also the forked lever at the same time, by compressing the spring, the mentioned parts leaving this position and arriving in the closure position under the action of the closure spring when the forked latch reaches the door closure latch.

In closure devices of this type, opened by means of a push rod during the opening movement of the handle, it is necessary to have two springs. Closure is then carried out as soon as the latch mounted on the pivoting door arrives at the door latch, most often provided with a roller and attached to the shell of the refrigerator. The latch then strikes the roller of the door latch, which causes an unpleasant noise. Moreover, to operate the push rod, it is necessary to have a door handle with two arms and to support it in a special cover cap; mounted on the wall of the door.

The invention especially concerns a closure device, especially for a refrigerator door, a device containing a pivoting latch controlled by a pivoting lever subject to the action of a spring, a device characterized by the fact that the pivoting lever is connected by connecting rods or fishplate joints to the pivoting latch, on the one hand, and to the operating device, on the other, a simple and not very noisy device.

The invention also extends to characteristics resulting from the following description and the appended drawings, as well as their possible combinations.

The following description relates to the enclosed drawings, which represent an example of the invention, drawings in which:

Figure 1 is a front perspective view of a refrigerator;

Figure 2 is a schematic view of the articulations of the closure device.

Figure 3 is a cross-section along line III-III of Figure 1 on a larger scale;

Figure 4 shows the principal articulated parts of the closure device in their opening position;

Figure 5 shows the handle, seen on the side opposite the refrigerator door, with a partial cross-section of the lock mounted in the handle;

Figure 6 is a cross-section along line VI-VI of Figure 5 of the principal part of the handle;

Figure 7 is a side view of the plastic cover strip for the side of the handle opposite the refrigerator door.

In Figure 1, the door of the refrigerator is denoted 1 and the door handle is denoted 2. The parts of the articulation schematically shown in Figure 2 are accommodated in the door. A pivoting lever 3 is supported on a fixed axis 4. A fishplate joint 5 is articulated on this lever at 6 and a second fishplate joint 7 is articulated at 8. On the other side, the joint 5 is articulated on one end of a traction rod 10 guided linearly at 9, and joint 7 is articulated on one arm 11 of a two-arm lever. The other arm 12 of this pivoting lever on a fixed axis 13 is forked and serves as a forked latch with a door closure latch 14 attached to the refrigerator.

The articulation 6 is also articulated on the end of another fishplate joint 15, which, in the vicinity of its other end, has an elongated hole, through which a fixed axis 16 protrudes. A coil

spring 17 that serves as closure spring is threaded onto joint 15, which is supported on one side against a shoulder 18 of fishplate 15 and on the other side against the fixed axis 16. The closure spring 17 tends to push or hold the pivoting lever 3, and through it the forked latch 12, in the position shown in Figures 2 and 3, so that the latch engages in this position with the door latch 14 and thus keeps the door pressed or closed.

As is apparent in Figure 3, the end 19 of the traction rod 10 opposite the fishplate joint 5 is equipped with a transverse pin 20, which is engaged through the rear by cogs 21 of an entrained fork part 22 when the handle 2, assembled with the forked part 22, rotates via screw 23 around its axis 24. The handle 2 is supported by means of a cylindrical axis 25. The forked part 22 can also pivot around axis 24 and around dowel 26. The dowel 26 is supported in the support block 28 attached to the wall of door 27 and carries a torsion spring 29 wound as a coil spring, which acts on the forked part 22 in the direction of closure of the handle.

The part 30 of the handle 2, containing its articulation, encloses the support block 28. The cover attached to the outside wall of the door in the known versions is eliminated for this reason.

In Figure 4, the closure device of the door, shown with solid lines, is in the opening position, the device shown with the dotted line being in the dead point position of the closure spring. During closure of the door, the forked latch can be pivoted about 15° from the opening position, until it arrives in the dead point position. From the dead point position, the forked latch 12, by surrounding the roller 31 attached to the door latch with limited play, exerts a pressure on the roller.

As can be seen in Figures 5 and 6, a lock 32 to lock the handle in its rest position is found in the door handle 2. The lock 33 of the locking device is guided longitudinally and protrudes in the closure position into a recess of the support block 28.

The outside of the door handle, and therefore the screw 23 and bolt 34 that serves to attach the lock, are covered by a plastic cover strip 35. This strip, shown in Figure 7, is held merely by elasticity in grooves 36 and 37. It has on its two ends a tab 38 on one side and a handle 39 on the other side, which penetrate into the groove 36 or hollow 37 of the door handle 2.

The invention also extends to a refrigerator door equipped with a closure device conforming to the preceding.

The version shown and described does not limit the invention; other versions are also possible, without departing from the scope of the invention.

SUMMARY

The invention extends, in particular, to the following characteristics and their possible combinations:

1. Closure device, especially for a refrigerator door, a device comprising a pivoting latch controlled by a pivoting lever subject to the action of the spring, a device characterized by the fact that the pivoting lever is connected by connecting rods or fishplate joints to the pivoting latch, on the one hand, and to the operating device, on the other, a simple and not very noisy device.

2. Closure device, especially for a refrigerator door, a device comprising a forked latch supported to pivot, cooperating with a door latch to close the door, articulated with a pivoting lever, with a closure spring also acting on the pivoting lever and a door handle supported to pivot on the door, which, during its opening movement, brings the pivoting lever into the opening stop position by causing it to pivot around a fixed axis, and also the forked latch, while compressing the spring, the mentioned parts arriving in the closure position when the forked latch arrives on the door closure latch under the action of the closure spring, a device characterized by the fact that the forked latch, as well as the traction rod entrained by the handle with one arm, are each articulated during the opening movement on the pivoting lever by a fishplate joint.

3. The axis of the closure compression spring pivoting around a fixed axis is directed when the door is closed, toward the forked latch and when the door is open, toward the fixed axis of the pivoting lever.

4. The fishplate joint, articulated on one side on the traction rod, engages on the other side the closure spring on the same articulation of the pivoting lever.

5. The end of the traction rod on the handle side has a transverse pin, whose ends are engaged by cogs of a forked entrained part attached to the handle.

6. The forked entrained part is assembled movable on the handle by means of a screw and is articulated with the handle on the same pivot axis as a support part resting on the outside face of the door.

7. A part of the handle containing the articulation of the handle encloses the support part and the entrained forked part, which is articulated on it.

8. The device includes a lock arranged in the handle to lock the handle in its rest position, the lock of the locking device protruding in its closure position into a recess of the support part.

9. The outside surface of the handle on a side opposite the door receives a plastic strip that elastically penetrates into the handle to conceal the screws.

10. The plastic strip has a tab that penetrates into the groove of the handle on its end reaching close to the end of the handle, the strip being elastically housed in a hollow of the handle on the other end of the handle facing the door by means of a handle turned outward.

11. The entrained forked part is supported on a dowel attached to the support block, in which an axis is fitted, held in place, because of its curvature, and serving as a pivot for the handle.

12. A torsion spring is positioned on the dowel, which is supported under stress on one side on the support piece and on the other side on the entrained forked piece, which tends to hold this forked part or return it to the rest position with the handle, with which it is assembled.

13. Refrigerator equipped with a closure device according to the preceding.

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